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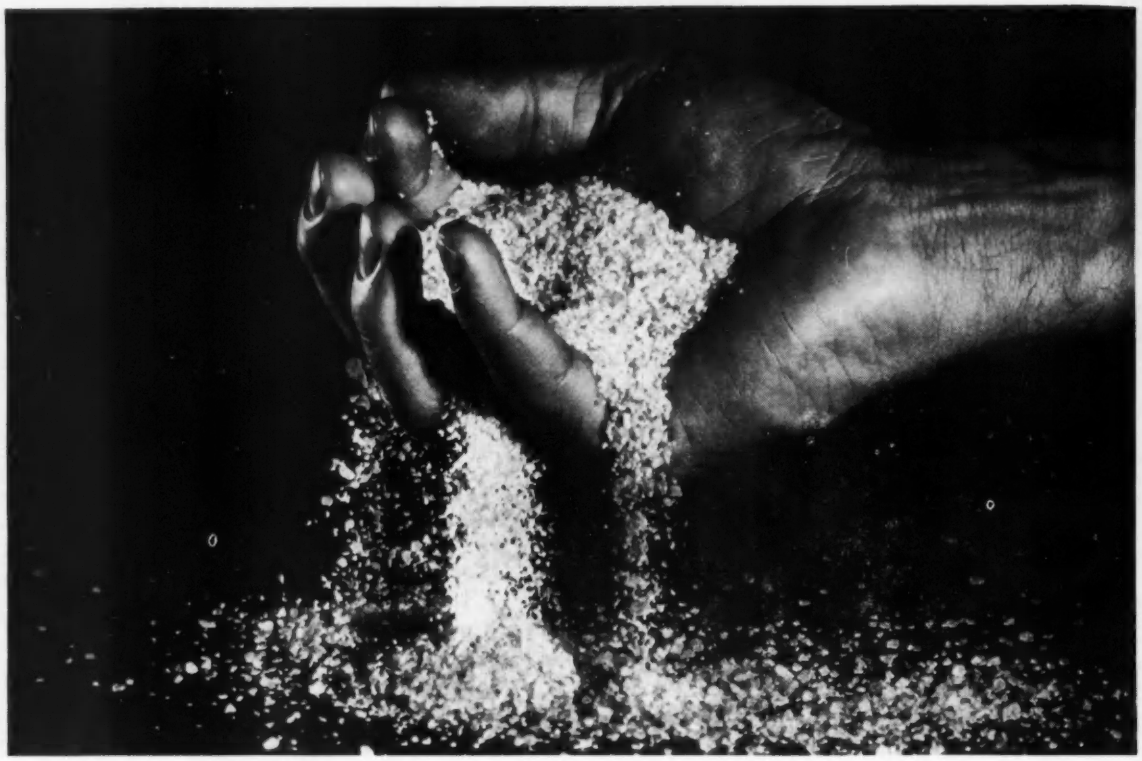
Latest estimates for the 1958-59 citrus season divulge the fact that Florida is producing nearly one-third of the entire world's supply of oranges, grapefruit and tangerines.

Zach Savage reports that Florida produced 72 percent of the world's supply of grapefruit in 1958-59, making this state's production of 35,200,000 boxes two and one-half times as much grapefruit as was produced in the rest of the world combined.

From a very small beginning and after numerous setbacks, occasioned by pests and weather, Florida growers have not only increased the volume of citrus to the vast proportions noted above but have improved the quality of citrus until today it also ranks at the very top.

All of which should furnish Florida citrus growers with a maximum degree of pride and satisfaction.

VOL. 40 — NO. 11 NOVEMBER, 1959 BARTOW, FLORIDA



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AGRICULTURAL CHEMICALS DIVISION

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

Administrative Center: Skokie, Illinois

Citrus Insect Control For Winter 1959

W. L. Thompson

R. B. Johnson
W. L. Thompson
W. A. Simanton

R. B. Johnson

Florida Citrus
Experiment Station
Lake Alfred,
Florida

W. A. Simanton

With the exception of red scale, insect and mite problems have not been especially troublesome during the fall. The warm weather with abundant rainfall favored the fungus organisms that are a substantial factor in the natural control of these citrus pests. On the other side of the ledger, wet weather was responsible for melanose being much more prevalent than usual on each new flush. An abnormally high incidence of scab also was evident on susceptible varieties.

In a number of areas, a high water table in poorly-drained groves has caused visible decline due to water damage. No doubt many trees have suffered some water damage to their root systems even though symptoms are not presently apparent. Should dry winds, drowth or excessive insect and mite populations occur, trees with root injury will exhibit firing, mesophyll collapse and leaf drop to a much greater extent than healthy trees.

Red scale increased rapidly in October to a high level and will be a problem in many groves during late fall and early winter. Purple scale has remained far below the population levels of previous years due to natural control factors. This fortunate situation is expected to continue through the winter. Citrus red (purple) mite has been relatively scarce since summer. Although high populations are not expected this winter, build-up can be rapid if rainfall drops below average. Texas citrus mite is well on its way toward becoming a troublesome winter pest and should be checked frequently. This mite is more likely to be found on tender growth in young groves and often only on certain sections of the tree or in part of a grove. Rust mite was generally low during the fall but will build up substantially during November and December and be numerous until February. During late winter, populations of six-spotted mite will begin to increase and should be kept under observation.

*Written October 22, 1959. Reports of surveys by Harold Holtsberg, Fort Pierce; J. W. Davis, Tavares; K. G. Townsend, Tampa; T. B. Hallam, Avon Park; and L. B. Anderson, Jr., Lake Alfred.

SCALE AND MITE ACTIVITY BY DISTRICTS *

District	Purple Scale	Red Scale	Purple Mite	Rust Mite on leaves
West Coast	.92	4.58	.75	2.10
Indian River	1.39	3.29	1.06	1.67
Upper East Coast	.43	3.90	.71	.72
Gainesville	.67	5.59	.17	.34
Orlando	1.48	2.19	.76	.78
Brooksville	2.73	**2.33**	.67	1.84
Ridge	3.17	3.57	.85	1.05
Bartow	3.11	3.78	.22	2.45
State Average	2.40	3.44	.73	1.45
Last Year	3.57	3.54	.71	1.30

*Second week in October. Activity is computed from populations, amount of hatching of scales, and number of groves with increasing or decreasing infestations. Activity is considered high if above 4.0 for purple scale, 3.0 for red scale, and 1.5 for mites.

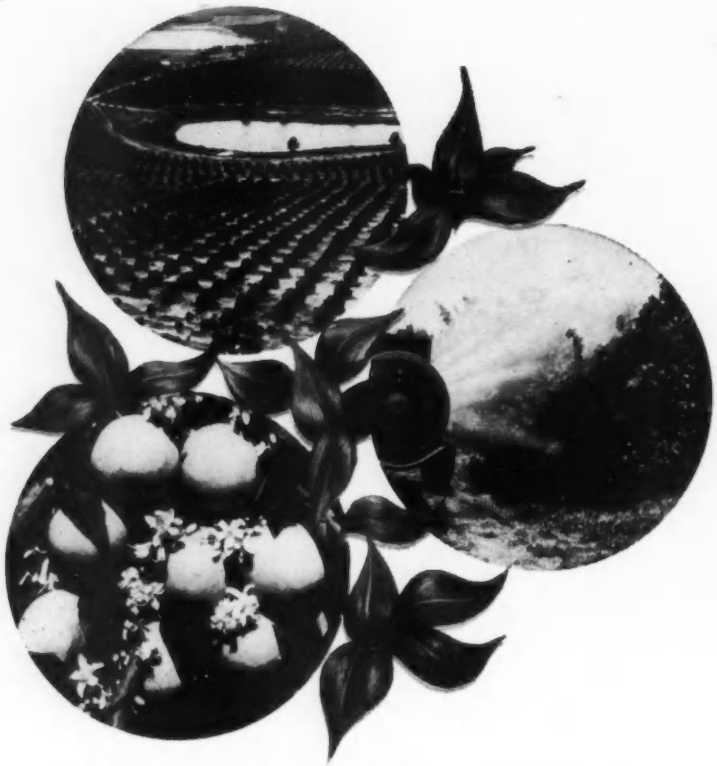
SPRAY PROGRAM

During November and December, most growers will be busy with the fall mite control program, occasional year-end infestations of scale, and miscellaneous local problems such as grasshoppers and plant bugs. January, however, ushers in a new year; it is a good time to review the pest control program to see what improvements can be made. It is also a good time for an over-all inspection of groves for scale insects, mites and diseases to see what will be needed during the dormant or pre-bloom and post-bloom periods. Growers who take these two steps will be better prepared to handle more effectively their pest-control problems in the year ahead.

MITE CONTROL: Cool, dry and windy weather usually predominates during the late fall and throughout the winter months. These conditions are conducive to firing, mesophyll collapse and leaf drop which may occur in the absence of mites, but are always accentuated by purple mite, Texas citrus mite and rust mite. In fact, these types of injury may be increased by a mite infestation even after the mites have been eliminated. For this reason, it is advisable to keep all injurious mites well under control throughout the winter months. This means that control measures should be applied before mite populations reach injurious levels and not afterwards.

The only sure way to determine when to spray for mite control is to examine the trees at frequent intervals. Both fruit and foliage should be examined for rust mite; green twigs as well as leaves should be checked for purple mite and Texas citrus mite. In addition, it is wise to check tree tops as well as lower portions because mites tend to be more numerous in tree tops and southeast areas during the winter. As much attention should be paid to purple mite eggs as to the mites themselves. They often constitute a warning that a mite outbreak is imminent.

Although the available miticides have some preventative value, it is nearly as unwise to spray too early



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as it is also unwise to control one species of mite in the hope that others will not need control. It is practical to spray for all mites even if only one species is present. Apply control measures for all mites as soon as 10 to 20 percent of the fruit or leaves is infested with any of the injurious species.

Now we come to the question of which miticide or mixture to use this fall and winter. Each will be discussed in detail, but first a few general comments seem to be in order. One often hears that this or that miticide will last all winter and more specific intervals are sometimes quoted. Although some, if not all of our miticides may produce such results, we can neither predict when they will occur nor can we be certain how long any miticide will give control. The interval of control depends not only on the miticide itself, but also on the thoroughness of application, weather, the severity and persistence of the mite problem, date of treatment, and perhaps other factors as well. If there is a severe and persistent outbreak of purple mite this winter, only Tedion is likely to last to post-bloom. If the mite problem remains fairly mild, however, such results may be obtained with other miticides.

Time intervals between applications and harvest have been established for all miticides that may be used on bearing trees. These intervals may be found on labels. They must be observed in order to prevent excessive residues at harvest.

Tedion: This miticide presents no known hazard to the user and is compatible with other materials used on citrus. **It must not be used where there is fruit.** This confines the use of Tedion to nursery stock, nonbearing trees, or **to bearing trees only after the entire crop has been picked.** Tedion will give the longest period of control of purple and Texas citrus mites of any known miticide, but it will not control rust mite and must be used with zineb, Chlorobenzilate or sulfur.

Recommended dosage: 0.5 lb. of Tedion 25W per 100 gallons in thorough coverage sprays only. Supplement with 0.5 to 1.0 lb. of zineb or Chlorobenzilate 25W (or 0.5 to 1.0 pint of Chlorobenzilate liquid) or 10.0 lbs. of wettable sulfur.

Trithion: Although Tedion is more likely to last until post-bloom than Trithion, the latter has given

Continued on page 13

The Citrus Industry
EXCLUSIVE SPECIALIZED CITRUS PUBLICATION
Issued Monthly
Representative of every interest
Representing no special interest

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Manpower Problems In Agriculture

An Address by Matt Triggs, Asst. Legislative Director American Farm Bureau Federation . . . AT 16TH ANNUAL CONVENTION FLORIDA FRUIT AND VEGETABLE ASSOCIATION

For someone from Washington to hope to bring to an audience of Florida fruit and vegetable producers anything they haven't thought about and talked about relating to farm labor is a little like carrying coals to Newcastle.

It is obvious that in the future, as in the past, perhaps to a greater extent in the future than in the past, the success of individuals in your industry will be determined in large measure by the effectiveness of the handling of their farm labor problem — selection and placement, supervision and management.

Just as personnel or labor management by industry is the major factor in the success of an industrial or commercial concern — so labor management by fruit and vegetable producers is and will be a major factor in their success.

There always will be a farm labor problem. The labor problems of farmers are more difficult in many respects than the labor problems of industry. Since most farm work is temporary, and since most capable and ambitious people want permanent jobs, agriculture is in the unfortunate position that it must rely for its seasonal operations, upon the residue of the labor force, that is unable to find permanent employment elsewhere, or upon farm labor importation programs subject to political determinations.

The nature and complexity of the farm labor problem at any time will, of course, be significantly affected by state and federal policies relating to various aspects of the farm labor problem.

It is, therefore, of interest to note that seldom, if ever, has the farm labor issue been active on more fronts than in 1959. More farm labor bills have been introduced in Congress than in any Congress I can recall. More farm labor bills have been considered by and enacted by State legislatures than (probably) in any other year. The Senate Labor Committee has appointed a Migratory Labor Subcommittee, which, according to Chairman Williams of New Jersey, will undertake a comprehensive investigation of this whole subject. The number of metropolitan newspapers who have carried articles on farm labor conditions, usually sensational in nature, has been exceptionally large during 1959.

It is not coincidental that farm labor issues are developing as active policy questions at this time.

This is a national consequence of the victory labor unions won at the polls last fall.

They themselves boast that 25 of the 32 Senators they supported were elected; 17 of the 23 Governors they supported were elected; 70 percent of the representatives they supported were elected.

Perhaps the most significant political development of the past decade is the emergence of labor unions as a powerful political force, with tremendous resources of manpower, money, publicity, and organization available for political purposes.

The AFL-CIO decided that 1959 was the year to begin an all-out campaign to accomplish certain long-cherished objectives relative to farm labor.

They appropriated $150,000 for an organization campaign among farm workers. I understand all of this, plus money contributed by individual unions is being spent in California. Reports I have heard so far indicate they are having little, if any, success with this organization campaign.

You know as well as I, or better, that the organization of farm workers means the subservience of farmers to labor unions.

Farmers are the most vulnerable employers in the world because they can not stand a strike during a harvest period, which is, of course, the time a strike would be called.

You can't close down a farm like you can a factory.

A factory doesn't necessarily lose any money during a year in which it has a strike, even a prolonged strike.

But if a farmer could not get his crops harvested, he would lose not only his year's income, but a sub-

stantial investment in producing the crop as well.

Thus any effective organization of farm workers would mean that the farmer would pay whatever wages and provide whatever working conditions the labor union decided to require.

And then in February, the National Sharecroppers Fund, a front for the AFL-CIO, held a so-called hearing in Washington. This hearing was conducted by a Farm Labor Advisory Committee.

The farm labor experts on this committee included Norman Thomas, many-time candidate for President on the socialist ticket, Eleanor Roosevelt, Phillip Randolph, an AFL-CIO vice-President and head of the sleeping car porters union, ex-Senator Frank Graham of North Carolina, and ex-Senator Herbert Lehman of New York.

This hearing was attended by an assorted group representing a variety of "liberal" organizations.

I think this hearing might well be described as a national kickoff meeting of a campaign to accomplish a number of purposes relating to farm labor.

It did not exactly come as a tremendous surprise when this Farm Labor Advisory Committee issued — as the asserted findings resulting from the hearing — a 14-point program for farm labor, of which 4 are of primary significance. They recommended:

1. The use of the facilities of the Federal-State Employment Service should be restricted to growers meeting specified standards with respect to wages, housing and working conditions.

2. Minimum wage and hour provisions of the Fair Labor Standards Act should apply to farm workers.

3. Union organization of farm workers should be encouraged, and the Taft-Hartley Act should be amended to provide for collective bargaining by farm workers.

4. That child labor provisions of the Fair Labor Standards Act should be extended to children out of school hours as well as during school hours.

Another consequence of the all-out effort of the AFL-CIO to regulate farm labor has been the establishment of a Migratory Labor Subcommittee of the Senate Labor Committee.

This Subcommittee is undertaking a compreshensive review of all aspects of the farm labor question.

They have held some preliminary hearings on a number of bills and will hold hearings on these and other bills next year.

One of these bills would prohibit a farmer from employing any minor under 16 years of age.

Of course, you can't employ them now during school hours — but this proposal would prevent them from being employed at all — during vacations, Saturdays or any other time.

The apparent assumption is that the employment of minors under 16 is harmful to them and constitutes exploritation by farm employers.

Ironically, on the day on which the first hearing was held, a Washington paper carried a story of the program of the Washington Police Boys Club. This club is undertaking a program of promoting the summer employment by farmers of groups of boys of ages 9-16.

Presumably the Washington Police Department was of the opinion that such work experience had some value from the standpoint of building self reliance, self-respect, self discipline and discouraging juvenile delinquency.

Yet we must recognize the emotional impact of the words "child labor" on many people of the U. S. and many congressmen.

A second bill under consideration would extend the minimum wage and maximum hour provision of the Fair Labor Standards Act to farm workers on large farms.

Since 1947, farm wages have increased 54 percent during a period in which farm prices declined 12 percent and net farm incomes declined 31 percent.

Since 1947, farm wages have increased twice as fast as the increase in the cost of living.

Farmers cannot, certainly in the short run, and probably in the long run as well, pass on these increased costs to consumers.

The enactment of minimum wages for agriculture would, therefore, tranfer income from farmers to workers by political intervention.

Minimum wage legislation would create unemployables of many of the lowest caliber of farm workers, who may be worth something, particularly when employed on a piecework basis, but are not worth as much as would be required by an hourly guarantee.

Minimum wage legislation is dificult enough to apply in a factory price rate operation, where output norms are standardized and supervision is continuous and close. It would be impossible to administer in farm harvest operations. Any incentive to maximum production on piece-work operations would be destroyed by a minium hourly guarantee.

The initial proposal would extend minimum wage and hour privisions to only 1 or 2 percent of U. S. farms. But we should recognize this as the camel's head under the tent. All regulatory programs tend to start small and grow more comprehensive as time goes by. If agriculture is divided, so that some farmers are not covered and some are — it is but natural that those who are covered will come to favor broader coverage — so their competitors will be covered too.

Nine months ago, if anyone had asked me the question — does the Department of Labor have authority to require farmers to pay any particular level of wages to farm workers, or to establish standards for farm labor housing, or to require farmers to pay transportation to prospective farm workers for distances of 1,000 miles or more, I would have replied with assurance, that of course no such authority had ever been delegated by the Congress to the Department of Labor.

Yet on September 10, the Secretary of Labor held a hearing in Washington on proposed regulations which provide that any farmer who wants to use the services of the State or Federal Employment Service, to recruit workers for him from out of the state must meet specified criteria with respect to wages, housing and the payment of transportation.

The regulations are asserted to be authorized by some general language in the Wagner-Peyser Act of 1933, the Act creating the Federal Employment Service. The Attorney General has ruled that the Secretary of Labor may establish employment standards for farmers obtaining labor through Employment Service facilities.

There is no purpose in reviewing the details of these proposed regulations. There have been two different preceding drafts. Probably there may be more.

But there are certain things common to any such proposals.

The first of these is that irrespective of whether or not the Wagner-Peyser Act may be strained to authorize this program — it is clear Congress did not intend, suppose, or anticipate at the time the Act

was approved, that it would ever be so construed.

It is axiomatic that an executive agency should administer statutes in accord with the actual intent of the Congress.

Otherwise the executive agency is engaged in the enactment of legislation by executive order — it is assuming a Congressional prerogative.

Farmers are entitled as a matter of right — before any such program is undertaken — to Congressional consideration and action. It is Congress that should make the policy decisions, rather than a single man in an executive agency.

The proposed regulations violate another fundamental principle of government in that the Department of Labor not only writes the law — it also becomes judge, jury and executioner. If in its discretion a farmer is guilty of violation of the regulations, a heavy economic penalty, the denial of labor, is imposed, without due process of law or judicial remedy of any kind prior of penalty.

The proposed regulations are so vague, general, and ambiguous in their language that no farmer can read them and reach any exact understanding of what they require him to do.

He will not find out what they mean to him until he is told by an official of the Department of Labor and when he is told, that is the law.

This is a far cry from government by law. This is government by men. These regulations really constitute a tremendous delegation of authority and power, to individual officials who would have broad discretionary power.

This is the kind of regulation that makes free men grow small in the presence of individuals who have such power over their interests.

This is the kind of regulation that tempts people to wine and dine and curry favor with individual officials who can make decisions so vitally affecting them.

This is the kind of regulation that permits officials to undertake reprisals against those they do not like or who are insufficiently cooperative.

This is quite a peculiar situation. It is from the so-called liberal wing of the Democratic party that we have heard demands over the years for regulation of the employment of farm workers. But here we find a Republican Secretary of Labor, egged on by a self-righteous and empirebuilding bureaucracy, and apparently motivated by political ambition leading the parade.

Will the Secretary issue the proposed regulations? At this time I know of no reason to assume that he will not — unlss headed off by higher authority. On the basis of very incomplete knowledge relative to the forces involved, I would guess it is about an even bet that the regulations will be issued.

It may be that these efforts of the Labor Department to regulate the farmer-worker relationship are quite unrelated to the push of the AFL-CIO for broad scale action on the farm labor front. All I can say is that they certainly coincide time-wise.

These developments suggest the question, are there any measures relating to farm labor that farmers ought to support.

I will stick out my neck to this extent, it seems to me that it would be advisable in the long run interest of farm people to initiate and support three proposals:

1. The enactment of state migratory labor housing codes by those states that have not done so.

2. The enactment of state legislation providing safety standards for the transportation of farm workers by motor safety.

3. The enactment of state legislation providing for workmen's compensation for farm workers for injuries sustained in the course of employment by those states that have not done so.

If these three measures are widely adopted by state action — this would provide an important defensive argument against the more comprehensive legislative proposals that are certain to be advanced in Washington.

The labor reform bill approved by the Congress contained a number of provisions of substantiaal significance to farmers.

Although the Landrum-Griffin bill approved by the House was watered down in some respects by the efforts of the Senate conferees on the House-Senate Conference Committee — the finally approved version retains reasonably effective provisions relating to secondary boycotts, hot cargo, and recognition picketing.

These have been effective weapons of the labor racketeer. They have been widely used in the building of the Teamster Union emipre. They have been commonly used to obtain employer signatures on union contracts even though the majority of workers did not want to join the union or to be represented by the union.

Many farm marketing cooperatives and other marketing concerns have been the victims of these practices and have watched helplessly as their markets evaporated. In too many cases agricultural marketing concerns have been compelled by such economic pressures to capitulate and to force unwilling employees into the union.

Of special significance to the fruit and vegetable industry are the provisions of the labor reform bill designed to eliminate the truck unloading fee racket in Middle Atlantic States. Effective enforcement of such provisions promises the end of this extortionate practice, which has cost fruit and vegetable farmers millions of dollars annually in recent years.

Thus we have the extraordinary situation that the labor unions, immediately following their greatest election victory, nevertheless suffered a substantial defeat in the Congress.

Yet it would be naive to suppose that labor reform legislation has reached the root causes of abuse of power by labor unions.

The economic power of labor unions to force wage rates up faster than productivity, with inevitable inflationary consequencess, has not been significantly impaired.

The political power of labor unions in many election districts to select and elect their candidates, with the use of funds collected from captive members, has not been touched.

The legislative power of labor unions in the Congress, to further a program involving centralization of authority in the federal government, the substitution of government or political controls for the impersonal disciplines of the market system, and irresponsible inflationary spending programs for virtually any purpose is, despite the enactment of labor reform legislation, still strong, potent and effective.

We should not be mislead by the Congress's approval of labor reform legislation against the views of labor union leaders, to suppose that the political power of labor has been weakened. This was an unusual situation, an uprising of public demand, that temporarily overrode the political influence of labor unions.

So long as labor unions retain their exemption from anti-trust statutes, so long as they are free to

Continued on page 14

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Variations In Quality Of Marsh Grapefruit

By William G. Long, Paul L. Harding, Mortimer J. Soule, Jr., and Millard B. Sunday*
Biological Sciences Branch, Agricultural Marketing Service, U. S. Department of Agriculture

Introduction

More than 37 million boxes of grapefruit were produced in Florida during the 1956-57 season, with a yearly average of 34 million boxes between 1949 and 1954. Approximately 18 million boxes, including about 10 million boxes of white seedless grapefruit, were shipped as fresh fruit. These fruit were worth in excess of $20 million to the grapefruit growers of Florida, an average on-the-tree-return of $1.42 per box. The total value of the crop as a source of income to related industries and services was much greater.

The flavor of each fruit is of vital concern since fresh grapefruit is usually consumed in the form of individual whole fruit or halves. Grapefruit must be mature according to existing standards for color, volume of juice, total soluble solids, acid, and solids-to-acid ratio, under the Florida Citrus Code of 1949 as amended, before it can be shipped in commercial channels. The maturity test is based on the analysis of a 5-fruit sample; however, testing of individual fruit is permitted. The ultimate criterion for approval of internal quality of any fruit is its acceptance by the consumer (14). If internal quality of fruit vary sufficiently that some sour or bitter-tasting grapefruit are shipped, the consumer's buying habits can be adversely affected.

Harding and Fisher (15) reported a delay between the time when grapefruit became legally mature in the fall and when they became palatable. The amount of delay was dependent upon such factors as variety, rootstock, climate, soil, crop year variations, arsenical sprays, and others. Baier (2), Bureau of Agricultural Economics (7), Capel (8), and Provan (21), found that most people do not like a bitter flavor in grapefruit. Bell (4), Branson and associates (6), Bureau of Agricultural Economics (7), and Sinclair and Bartholomew (25), reported that the flavor of grapefruit or grapefruit products is improved when sugar is added. The net result of sugar addition is a higher ratio of total soluble solids to acid and a sweeter more palatable fruit.

External quality of a grapefruit is important. A smooth, bright yellow colored fruit stimulates the initial sale by its pleasing appearance. Repeat sales depend on internal quality and palatability. Consumer prejudice against poor external appearance often can be overcome by education if internal fruit quality is good. It may not be overcome when internal fruit and flavor are poor, even if external appearance is excellent.

Baier (2) pointed out that grapefruit from different section in California and Arizona vary considerably in characteristics at maturity. Hilgeman (17) in Arizona found that the point at which different grapefruits are mature is a variable one. Wood and Reed (29) in Texas pointed out that physical factors were affected more than chemical factors by cultural practices; they favored solids, solids-to-acid ratio, and juice content for determining maturity.

Harding and Fisher (14, 15) in Florida used volume of juice and solids and acid nomographs as bases for determining maturity and palatability. Rygg and Getty (23) concluded that the best standard for grapefruit from California and Arizona was the solids-to-acid ratio. They stated that the relation of palatability to solids-to-acid ratio was not as close as it should be for a good index; the solids and acid nomograph did not always separate palatable and unpalatable grapefruit. The need for an improved index for determination of citrus maturity and of palatability has been cited by many authors (2, 14, 15, 21, 23, 29).

The ratio of solids to acid does not indicate either solids or acid content. The effect of solids and acid upon tartness, sweetness, or the body of flavor is shown by the "Pritchett Graphical Tongue" (3), which was developed for tasting orange juice in California. Percent solids is plotted against solids-to-acid ratio, and the points are enclosed for which the solids and acid were satisfactory to taste. Quality based on an average or composite value seems to be inadequate, since the extremes are the fruits that usually cause difficulty, not those near the average.

The present investigation of individual Marsh seedless grapefruit was undertaken to determine the extent of the variations in physical and chemical characteristics with respect to internal quality and their relationship to external quality. A better understanding of these variations might enable shippers to harvest and pack a more uniform product of substantially higher quality than is possible with existing methods of handling.

Methods

The investigation was conducted during the seasons of 1953-54, 1954-55, 1956-57, and 1957-58. A total of 3,800 grapefruits in 26 samples were taken at random from the packing bins of 18 packinghouses. The sample consisted of subsamples of 30 Marsh grapefruit each for sizes 46, 54, 64, 70, 80, and 96. These fruit had been washed, polished, waxed, graded, and sized into bins and were ready to be packed into containers for shipment.

They were placed in canvas bags and transported to the U. S. Department of Agriculture Horticultural field station at Orlando, Fla., and held a few days at 32° F. until tested. Ten of the 26 samples were collected in September and October (fall) and 16 during March, April, and May (spring). The fruit came from the Florida—central, ridge, and the east major citrus-producing section of and west coasts.

Twenty-five sound fruits were taken at random from each subsample after discarding any which were punctured or bruised in transit. They were numbered and weighed to the nearest gram. The diameter and height were measured to the nearest sixteenth of an inch. Color of the rind was determined by matching the fruit with plate 4 of Harding and Fisher (15). After each fruit was cut in half, the internal texture was classified as ricey, coarse, good, overripe, or dry, according to the definitions of these terms by Harding and Fisher (15).

The pulp and juice of each fruit were separated from the rind with an electric reamer and passed through a tapered-screw finisher equipped with an 0.027-inch screen. The juice was weighed to the nearest gram and measured to the nearest milliliter.

* Mr. Long is a horticulturist, Mr. Harding a principal plant physiologist, and Mr. Sunday a technician, with Agricultural Marketing Service, Orlando, Fla. Mr. Soule, Jr., formerly horticulturist with Agricultural Marketing Service, is now associate professor, Department of Fruit Crops, University of Florida.

Percent total soluble solids was obtained refractometrically. Total acid was determined by titration using phenolphthalein as the indicator, and ascorbic acid was determined by sodium 2, 6-dichloroindophenol titration (1, 5). Duplicate samples were analyzed in all cases. Active acidity (pH) was determined on a composite of each subsample.

Representative samples were taste tested and rated by the scorecard used by Harding and Fisher (15). The fall samples were generally tart (60-69), with some pleasantly tart (70-79), while samples were mostly pleasantly tart to sweet (80-100), with some pleasantly tart.

In order to study range and distribution of the chemical and physical measurements and their relation to quality, the data were grouped in classes in relation to the average. (1) Five classes with an interval of 50 g. were established for fruit weight, with the average rounded to the nearest 5 g. as the center of the middle class. (2) Five classes with an interval of 50 ml. were established for juice volume, with the average rounded to 5 ml. as the center of the middle class. (3) Four classes for diameter were defined for each size by using the minimum and maximum values for diameter allowed under the U. S. Grade Standards (20) as the lower limit for class 2 and the upper limit for class 3, with a class interval of one-half the permitted range in diameter. Class 1 contained all of the values falling below the minimum, while class 4 contained all of the values above the maximum. (4) A class interval of 1 percent was used for total soluble solids, (5) 0.20 percent for total acid, and (6) 1 ratio point for solids-to-acid ratio.

Results

Physical Measurements

Weight.—There was a wide variation in weight among individual grapefruit of a given size. For example size 96 fruit harvested in the fall (September and October) weighed from 288 to 451 g., with an average of 365 g., while fruit harvested in the spring (March, April, and May) weighed from 307 to 491 g., with an average 385 g.

When the weight distribution curves for each size were plotted the average or midclass generally contained the greater proportion of the values. As the fruit sizes increased from size 96 to size 46, there was progressively greater variation in weight and indicated by flatter curves for the larger sizes. Fifty-three percent of the fruits of size 96 were in the average or midclass as compared with 45 percent in size 80, 44 percent in size 70, 48 percent in size 64, 39 percent in size 54, and 27 percent in size 46. An increasing proportion of the fruits was found in the two extreme classes as fruit size increased from size 96 to size 46.

Fruits of size 96 harvested in the fall varied from an extreme of 21 percent below the average to 24 percent above; those of size 80 from 26 percent below to 29 percent above; those of size 70, from 28 percent below to 20 percent above; those of size 64, from 19 percent below to 28 percent above; those of size 54, from 23 percent below to 21 percent above; and those of size 46, from 20 percent below to 30 percent above.

The average weights of Marsh grapefruit harvested in the spring ranged from 20 to 41 g. larger than the fall samples. A small to substantial increase was noted in the percentage of individual fruits in the midclass for all sizes except 46. The proportion of fruit in classes above and below the midclass was more nearly equal than in the fall samples.

The range between minimum and maximum weights was larger by 21 g. for fruit of size 96 and by 103 g. for those of size 46 in the spring samples. On a percentage basis, the range between the minimum and maximum weights of the sizes was from 41 to 61 percent of the average values. Another noticeable difference between the fall and spring samples was the tendency in the fall samples, particularly in sizes 54 and 46, for the maximum weight to deviate more from the average than did the minimum.

Variations in fruit weight ranged from 39 to 50 percent of the average value between the minimum and maximum weights obtained for fruit harvested in the fall. Spring fruit varied from 41 to 61 percent on a similar basis, but the smaller sizes varied more than the larger. This relation was not apparent in the fall.

Harding and Fisher (15) and Rygg and Getty (23) reported increases in weight of grapefruit as the season progresses as well as differences between crop years. Numerous factors, such as rootstock, cultural practices, and so forth, are known to affect fruit weights (2, 14, 15, 18, 22, 26).

Diameter and Height.—The diameter of individual Marsh grapefruit harvested in the fall did not differ more than 12/16 to 14/16 inch depending on the size. Average diameters calculated for the measurements were essentially the same as the averages given by the regulations of the Florida Citrus Commission (11). The U. S. grade requirements were met by most fruit. In a few samples the fruits were smaller than the minimum diameter required or exceeded the tolerance for variability. Less than one-half percent of the fruit was larger in size than the maximum.

The variation of the diameters from the averages shows that the major proportion of the diameters was in the class above the minimum size. A very small percentage (less than 0.5) was above the maximum, while a few of the fruits of sizes 96, 54, 54, and 46 were below the minimum. Those of sizes 80 and 70 would appear to be sized slightly larger than some of the other sizes, since a greater percent occurred in the top half of the range specified by the U. S. standards than for the other sizes. The larger sizes were somewhat more variable on a numerical basis, but the percent deviation of the minimums and maximums from the averages was similar.

Marsh grapefruit of the spring samples were remarkably similar to those of the fall samples in average diameter and range as well as in distribution of individual fruits.

The difference between minimum and maximum heights of the different sizes ranged from 12/16 to 1-1/16 inch. The three larger sizes varied most. Fruits of size 96 had a range of 14/16 inch, while those of size 80 had the smallest range, 12/16 inch. Average heights varied from 3-6/16 inches for fruits of size 96 to 4-4/16 inches for those of size 46. Fruits harvested in the spring showed similar results. The presence of some late-bloom fruit in these samples had little effect on the average height or on the range in height. Increases in size of grapefruit as the season progresses have been shown by Harding and coworkers (15, 16) and Rygg and Getty (23), Jones and Parker (18), Reuther and Smith (22), and Sites (26) have shown that fertilization affects size.

Internal Texture and Conditions.—The juiciness and internal quality of a grapefruit are correlated with internal texture and condition. A ricey- or coarse-textured fruit has not yet developed the amount of juice necessary to distend the vesicle walls to the thinness found in a good- or prime-textured one. The majority of the fruits harvested in the fall were coarse in texture. The highest percentage of coarse-textured fruits was 83 percent, found in size 80, and the lowest was 66 percent in size 46. The lowest percentage of fruits with ricey texture, 11 percent, was found in sizes 96 and 80, and the highest, 34 percent, in size 46. Twelve percent of the fruits of size 96 were good in

Continued on page 18

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Rutledge Reports Citrus Crop Outlook Is Fairly Good

Grove conditions are fairly good throughout Florida's citrus belt despite recent heavy rains and the relatively wet summer, Robert W. Rutledge, Florida Citrus Mutual general manager, said in Mutual's first crop condition report for the 1959-60 season.

The 22-county report was made following a survey of crop conditions just completed by Mutual's field representatives. Rutledge said the report is "a representative sampling and not all inclusive".

"Most growers are finding a better total crop of early oranges than was expected a few months ago," he said.

Excerpts from the report by counties:

POLK—Most early crops appear to have reached mature size. Midseason oranges are still growing. Duncan grapefruit is very short in this area. Tree condition good with damage from heavy rains well localized.

LAKE — Mid-season oranges are lighter than last year although fruit sizes are larger. Generally a good crop of Valencia oranges with younger trees having more normal crop than older trees. Duncan grapefruit crop light with sizes not too large. Little water damage to trees.

ORANGE, SEMINOLE and OSCEOLA—Some scattered tree damage but extent of damage won't be known until spring. Exterior quality of oranges is much better than in the last few years.

HIGHLANDS—Orange crop expected to be about the same as last year. Fruit sizing well and interior quality is expected to be nearer normal than in most areas. Tree condition best in years.

HILLSBOROUGH — Early orange varieties appear to have a normal crop with sizes about normal due to high moisture content. Yield is expected to be less than last year. Valencia crop is about the same as last year with sizes large and tending to be on coarse side.

MARION—Orange crop generally short in this area except where groves were fired during freezes. Only about a half crop of grapefruit in this area and quality not the best.

DeSOTO—Oranges average size with fair quality. Crop expected to be about same as last season. Because of rain, interior quality and yield will be off in this area.

HARDEE—Groves in good condition generally except for some water damage. Because of heavy rains some growers are planning an additional application of fertilizer.

R. W. (BOB) RUTLEDGE

VOLUSIA and PUTNAM—Generally a shorter orange crop than last season with fruit sizes larger and a tendency to be coarse. Interior quality is expected to be somewhat below normal. Tree condition generally good.

CITRUS and SUMTER — Heavy early and mid-summer crop but crop not expected to exceed last season's.

CHARLOTTE, LEE and HENDRY —Extensive water damage to trees and groves with some loss of mature trees. All varieties of oranges except mid-seasons have about a normal crop.

ST. LUCIE—Very good quality orange crop with exception of mid-season oranges. Grapefruit crop slightly off normal production.

INDIAN RVER — Most varieties of oranges show a very good crop with normal sizes. General quality of grapefruit is good with sizes much better than last season.

BREVARD—Orange crop generally good. No excessive rains in this area. Grapefruit a little on light side but size and quality are excellent.

MANATEE and SARASOTA—Over 100 inches of rainfall in this area so far this year has caused some damage. No abnormal splitting of fruit and sizes appear to be above normal for this time of year.

DISTINGUISHED SERVICE AWARD — Willard M. Fifield (left) Gainesville, Provost for Agriculture, University of Florida, received the 1959 FFVA Distinguished Service Award at the 16th annual convention of the Florida Fruit and Vegetable Association in Miami. The award, highest honor given by the growers' organization, was presented by U. S. Congressman A. S. (Syd) Herlong, Jr., Leesburg. The award is presented annually to a man or woman who has made the most outstanding contribution to Florida agriculture during the preceding year.

CITRUS INSECT CONTROL FOR WINTER 1959

Continued from page 3

excellent control of purple mite, Texas citrus mite and rust mite from November until post-bloom. Such results may be expected from a thorough application made in November or later unless a severe mite outbreak develops. No rust mite miticide is needed with Trithion. This material is preferable to others where long control is expected from November sprays and Tedion cannot be used.

Trithion may cause grade-lowering green spots on grapefruit unless the fruit is fully colored at the time of application. Therefore, this material should not be used on green grapefruit to be sold as fresh fruit.

Recommended dosages: 0.5 pint of Trithion 4 Flowable or 1.0 pound of Trithion 25W per 100 gallons in thorough coverage sprays only. Precautions found on the label must be observed when handling this material.

Kelthane: Kelthane is less effective than Trithion against purple mite, Texas citrus mite and citrus rust mite. Yet it too has given control of all three species from November until post-bloom. In general, early applications may need retreatment before post-bloom, especially if the winter is warm, but sprays applied after December should last until post-bloom.

Recommended dosage: 1.0 pint of Kelthane EC (increase to 1.5 pints in warm weather) per 100 gallons in thorough coverage sprays only. Kelthane should not be used in alkaline sprays.

Delnav: Although somewhat more effective than Kelthane against rust mite, Delnav is slightly less effective against purple mite. These differences, however, have not been very great in fall and winter sprays. Both are superior to DN Dry Mix No. 1 and both may be used without a supplemental rust mite miticide.

Recommended dosage: 1.0 pint of Delnav Liquid-2 per 100 gallons in thorough coverage sprays only.

Systox: Against purple mite, Systox is more effective than DN Dry Mix No. 1 and only slightly less effective than Kelthane. It does not control rust mite. This is a hazardous material.

Recommended dosage: 0.5 pint (1.0 pint in warm weather) per 100 gallons in thorough coverage sprays only. Supplement Systox with 0.5 to 1.0 lb. of zineb or Chlorobenzilate 25W (or 0.5 to 1.0 pint of Chlorobenzilate liquid) or 10.0 lbs. of wettable sulfur.

DN Dry Mix No. 1: DN Dry Mix is the least effective of the miticides, especially during rainy weather, and does not control rust mite. It must be supplemented with sulfur or Chlorobenzilate. The mixture of DN and zineb is not recommended because it not only does not last quite as long as DN + sulfur or DN + Chlorobenzilate, but it causes a pronounced abnormal increase in purple mite at the end of the control period. Do not use DN with oil or in alkaline solutions.

Recommended dosage: 0.66 lb. of DN Dry Mix No. 1 in thorough coverage sprays only. Supplement DN Dry Mix No. 1 with 0.5 to 1.0 lb. or pint of Chlorobenzilate or 10.0 lbs. of wettable sulfur.

SCALE CONTROL: Very little control of purple scale should be necessary this winter, but red scale may be a problem in some groves. Where either species of scale is noticeable, it may be advisable to spray to prevent the loss of fruit and leaves. Particular attention should be paid to infestations on late varieties because infested fruit is the source of infestation on spring growth. However, dormant scalicides are usually not recommended except in the Indian River area from Sebastian southward. In this area, a winter scalicide is very effective and is recommended where it fits into the spray program.

Either 0.25 pound actual parathion or 1 to 1.25 pounds actual malathion per 100 gallon is recommended for a fall or winter scalicide if needed. Oil is a shock to trees. It makes them more susceptible to cold weather and may cause the trees to have a light bloom in the spring. Oil also retards degreening, but after the friut is colored, it will not cause it to regreen. In addition, oil sprays reduce solids, but not if applied after the fruit has matured.

If oil is to be used, delay the application until just before growth starts or when there is pinpoint growth. If the oil is delayed in this manner, there will be less chance of cold weather damage. After young leaves have formed, both oil and parathion sprays are likely to cause injury. There is a waiting period between spraying and harvest of 14 days with parathion and 7 days with malathion. Parathion and malathion can be mixed with most spray materials, but a mixture of DN Dry Mix and parathion may cause leaf drop and peel injury where the spray drops collect on the lower third of the fruit.

GRASSHOPPER CONTROL: Grasshoppers can be very injurious by eating a large portion or even all of the foliage from young trees. Infestations on citrus are most likely to happen after the cover crop has been chopped or disced. Grasshoppers also migrate into groves from adjacent uncultivated areas.

Parathion at 0.45 pound actual per acre will give a quick kill, but it has no residual effect. Chlorodane, toxaphene, lindane and dieldrine are materials that give longer control. If fruit is on the trees at the time of application, there is a waiting period of 30 days between spraying and harvest with all of

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these materials except parathion. The interval for parathion is 14 days.

PLANT BUG CONTROL: Plant bugs are sometimes a pest on tangerines and early varieties of oranges where the citron melon is present or where a leguminous cover crop has been grown. Fruit that has been attacked will turn a deep orange color and drop. Plant bugs can be controlled with the same materials used for grasshopper control.

SCAB CONTROL: Scab control will be important on Temples, Tangelos and some varieties of lemons and grapefruit. This disease will be most severe in coastal areas and in any area where the infection was severe this past summer. Good scab control depends upon a very thorough application of ferbam or copper applied just before growth starts or at the pinpoint stage. Use a copper compound at 0.75 pound of metallic copper per 100 gallons and if scab is likely to be severe, double that amount. Ferbam at 1.5 to 2 pounds per 100 gallon is also effective. Ferbam is registered for use only on trees that do not have fruit.

NUTRITIONAL SPRAYS: Zinc and manganese compounds can be applied either in January or post-bloom. If these compounds are applied in January, there will be no complications when a post-bloom copper-oil is applied.

MANPOWER PROBLEMS IN AGRICULTURE

Continued from page 7

consolidate their bargaining power on an industry-wide basis or even multiple industry basis, so long as they have the monopoly power of compulsory unionization, so long as they can use for political purposes the dues of their captive membership extracted by check-off procedures — unions will continue to be almost irresistible combinations of economic and political power.

It is a tragic thing that this almost overwhelming economic and politcial power apparatus, is so firmly committed to an irresponsible course of action.

In the labor union leaders lexicon, wage increases are good per se, the larger the better, irrespective of their effect upon prices. In fact they are inclined to put price increases down to the greed of employers, not called for by wage increases at all.

In the 10 years I have been in Washington, I do not recall a single instance where labor unions recommended a reduction in federal expenditures. They want increased appropriations for every governmental purpose from federal aid to education, to resource development to welfare expenditures, to socialized medicine. In the labor union press the term "budget balancer" is a choice epithet.

Labor unions call for governmental action to reduce interest rates, although surely their economits have told them that the only way government can reduce interest rates when demand for credit is increasing, is to inflate the money supply, which would touch a match to the fuse of inflation.

Labor union leaders have no apparent concept at all of the importance of maintaining state authority and responsibility. They would transfer virtually all government responsibility to Washington, leaving the states as mere administrators of federal law and federal programs. They bitterly oppose any effort to reestablish the integrity of state law or authority.

A socialist may perhaps be defined as one who is for the next politically feasible step towards socialism. By this test, labor unions are for every socialist proposal advanced in Congress, from public power, to public housing, to socialization of the atomic energy industry, to free distribution of food to the poor, to free medical care for large portions of our population.

I do not presume to guess at motives, but I doubt that any reader of the labor union press can avoid the conclusion, that such press is dedicated to smearing the employer class and castigating the profit system — thus preparing the way for major modification of our economic system.

Put these things together — they constitute a political and economic program that tends, in my opinion, towards disastrous weakening of the concepts and institutions that have made the American society strong, productive, reliant and free.

I think the overwhelming economic and political power that labor unions have gradually acquired and the irresponsibility of their use of such power, is the most important issue of our time, because the answers we find or fail to find to this one, will vitally affect what we do or are able to do with respect to all other public policy issues.

Hearing On Push And Treat Program To Be Held Nov. 10

A public hearing has been called for November 10 in Orlando by the State Plant Board for the consideration of new rules and regulations for conducting the push-and-treat program against spreading decline in citrus. Changes to be discussed are in keeping with a January ruling on the program by the Florida State Supreme Court.

The principal change in the plan provides that the Plant Board shall not push and treat a citrus grove without consent of the owner unless the board agrees to make acceptable compensation for all trees damaged or destroyed in the process. In the past, the board had the authority to push diseased citrus trees with or without consent of the owner.

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Quality Will Control Grapefruit Prices This Season

On-tree price returns for Florida grapefruit will hinge more than ever on quality this season, Robert W. Rutledge, Florida Citrus Mutual general manager, said today in a current grapefruit utilization report.

Rutledge indicated the 1959-60 grapefruit crop will be somewhat smaller than last season's 35,200,000 boxes.

He said the report is based on a possible 1959-60 grapefruit crop ranging from 30 to 32 million boxes.

The major part of this season's grapefruit crop will go into fresh fruit chnanels, Rutledge said.

For a 30-million-box grapefruit crop, Rutledge forecast total fresh fruit utilization of 14,800,000 boxes. This includes fresh and express shipments, export and home use.

With last season's 35,200,000 box grapefruit crop, fresh utilization totaled 16,640,000 boxes.

"If the grapefruit crop should reach 32 million boxes this season, 15,450,000 boxes will be utilized in fresh form," Rutledge said.

Nearly 11 million boxes of grapefruit will be utilized in cannery operations based on a 30-million-box crop, he said. This includes canned canned juice, blend, sections and salads.

For 32 million boxes of grapefruit, nearly 12 million boxes will be utilized in cannery operations, Rutledge continued. Last season a total of 13,095,000 boxes of grapefruit were utilized in cannery operations.

Assuming a 30-million-box grapefruit crop, Rutledge forecast concentrators will utilize about 3,000,000 boxes in frozen grapefruit concentrate. Last season Florida concentrators utilized 4,309,000 boxes in this product.

If the grapefruit crop should reach 32 million boxes then concentrators will utilize 3,300,000 boxes in making frozen grapefruit concentrate.

EQUIPMENT COSTS RISING

Specialists on the Florida Agricultural Extension Service Outlook Committee predict the upward climb of supply and equipment prices will continue.

According to the committee, credit may be more difficult to obtain in that it probably will cost more and lending agencies may be more selective on the risks they assume.

Quality Control Is Necessary To Upgrade Pack Of Grapefruit

Grapefruit shippers can harvest and pack fruit of uniformly high quality if they use quality control methods described in a report issued today by the U. S. Department of Agriculture.

To determine the extent of variations in physical and chemical characteristics and the relation of internal quality to external appearance, Agricultural Marketing Service horticulturists studied over 3,800 individual fruits in packing houses where Marsh seedless grapefruit were being packed.

Wide variations were found in weight, volume of juice, soluble solids, total acid, vitamin C, and solids-to-acid ratios. All of these affect quality. Fruit weight, diameter, volume of juice, and texture of flesh were interrelated.

Researchers found that one of the most logical ways to improve quality would be to increase the minimum solids or solids-to-acid ratio, since acidity or tartness is one of the most frequent objections to grapefruit. Recommended were 9.0 to 9.5 percent minimum solids, 1.0 to 1.1 percent maximum acid, and a solids-to-acid ratio of 8.5 to 1 or 9 to 1.

The report also recommends that the quality of the packed fruit be determined by analyses of juice from individual fruits instead of mixtures of juice from several fruits.

A free copy of the report, "Variations in Quality of Marsh Grapefruit," AMS-336, may be obtained from the Marketing Information Division, Agricultural Marketing Service, U. S. Department of Agriculture, Washington 25, D. C.

W. H. CHAPMAN NOW HEADS NORTH FLORIDA EXPERIMENT STATION

Willis H. Chapman has been appointed agronomist in charge of the North Florida Experiment Station.

Dr. J. R. Beckenbach, director of the Florida Agricultural Experiment Stations, says Chapman is assuming the position vacated by W. C. Rhoades, who recently requested relief from administrative duties.

Chapman has been with the North Florida Station since 1942, when he was appointed assistant agronomist.

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VARIATIONS IN QUALITY OF MARSH GRAPEFRUIT

Continued from page 10

texture compared to only 1 percent in size 64, and none in sizes 54 and 46.

Among the samples harvested in the spring, sizes 46 and 54 showed the greatest amount of coarse textured fruit—14 percent. Sixty-two percent of the fruits of size 46 and from 64 to 71 percent in fruits of size 64 to 15 percent in size 46. One or 2 percent dryness was found in all sizes except size 80. Nine percent of the fruits of sizes 96, 80, and 70 were "late-bloom" type compared to 6 percent in size 46.

These data point out some interesting changes in the internal texture of individual fruits as the season progresses. Early in the season the texture of grapefruit improves rather rapidly from ricey to coarse to good, while later in the season the fruit begins to show overripeness and dryness. Fruits of size 46 seemed to be poorer in texture than those of other sizes.

Mixing of Varieties.—The presence of pink (Thompson) or seedy (Duncan) fruit a packed box of white Marsh seedless grapefruit is not uncommon and might cause unfavorable consumer reaction. A mixture with pink or seedy fruit can result from several causes. Perhaps most frequently it results from failure to clean out the bins between lots of fruit in the packinghouse. It may also arise through having a few off-type trees in the grove. Pink fruit were mixed more often with Marsh in sizes 64, 54, and 46 of the fall samples, with the greatest percent occurring in size 46. Zero to 4 percent of seedy fruit were found mixed with the Marsh, with sizes 46 (4 percent and 96 (3 percent) being the highest.

No pink fruit were found in the spring samples, which indicates that the mixture was probably the result of failure to clean out the bins. However, a greater number of seedy fruit was present, particularly in the larger sizes. The pink grapefruit are generally harvested early in the season, whereas seedy fruit are picked more or less throughout the entire crop year.

Juice Volume.—Minimum, maximum, and average juice volumes of Marsh grapefruit harvested in the fall and spring, together with the legal maturity requirements for juice set forth in the Florida Citrus Code of 1949, as Amended, (10) are given. Fruits of larger size showed a wider range on a volume basis. It was found, however, that the trend was quite different when the deviations from the average for each size were computed on a percentage basis.

The difference between the minimum and maximum juice volume of fruits harvested in the fall amounted to 76 percent of the average for size 96; 87 percent for size 80; 62 percent for size 70; 71 percent for size 64; 58 percent for size 54; and 64 percent for size 46. Grapefruit harvested in the spring averaged from 20 to 30 ml. higher in juice volume than the fall samples, and the differences between the minimum and maximum volumes were from 60 to 78 percent of the average. Fruit of the spring samples contained more juice than those picked in the fall, but they were more variable.

While the greatest proportion of the values occurs in the midclass, 44 to 65 percent of the fruits harvested in the fall fell into classes above or below this class, with more usually below. There was a distinct tendency in the larger sizes for a higher percentage of fruits to be in the extreme classes. Somewhat the same pattern was apparent in the spring samples, except that a higher proportion of the fruits had more juice than those in the midclass instead of less juice. This trend was accentuated in size 46 where the highest percentage of fruits was in the class just above the average.

Grapefruit harvested in the spring of the 1954-55 season had from 6 to 28 ml. more juice than those in 1956-57, while fruits harvested in the fall of 1956-57 contained from 25 to 49 ml. less juice than those in 1957-58. In the 1956-57 season the fruits

CITRUS ESTIMATE — OCTOBER 1, 1959

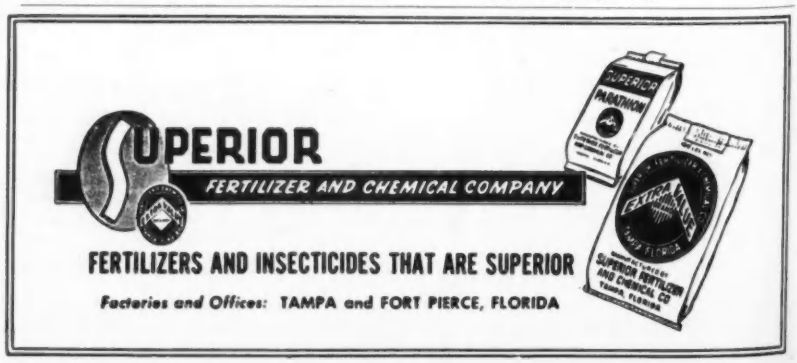
(Released by U. S. Department of Agriculture Oct. 9, 1959)

Comparison of Oct. 1, 1959 Estimate With Actual Production For Prior Year

	ACTUAL PRODUCTION* 1958-59	ESTIMATED FOR 1959-60 (At Oct. 1)
ORANGES		
U. S., All	129,030	**1
FLORIDA, All	86,000	93,000
Early & Midseason	44,100	47,000
Valencias	38,900	42,500
Temples	3,000	3,500
California, All	39,900	**1
Early & Midseason	16,900	15,000
Valencias	23,000	**1
Texas, All	2,300	3,200
Arizona, All	610	1,200
Louisiana, All	220	245
GRAPEFRUIT		
U. S., All	43,790	**1
FLORIDA, All	35,200	32,000
Seedless	19,600	20,000
Other	15,600	12,000
California, All	2,520	1,000**2
Texas, All	4,200	5,800
Arizona, All	1,870	2,700
TANGERINES		
FLORIDA	4,500	4,000
Total U. S. Citrus	177,320	
Total Florida Citrus	125,700	129,000

*Thousand Boxes

**1 Estimate not available until Dec. 20 **2 Desert Valley only



had relatively smaller amounts of juice than in either 1954-55 or 1957-58. This may be attributed to the fact that 1956-57 was a year of lower rainfall than the other two.

When the juice volume of Marsh grapefruit harvested in the fall and spring was compared with the legal maturity requirements it was found that some of the fruits did not meet the requirements. From 40 to 92 percent of the individual fruits collected in October 1956, and 24 to 52 percent of those in September 1957 failed to meet juice requirements. In October 1956, the average juice volume of the fruit of each size also failed, while in September 1957 only that of size 96 was below the minimum standard.

Samples collected in October 1957 had from zero to 36 percent of the fruits of a size in this category. In the samples of May 17, 1955, and March 5, 1957, up to 40 percent of the fruits harvested failed to meet the volume of juice requirements.

Differences between the low and high values for fall samples of 58 to 87 percent of the average volume of juice were found as compared to 60 to 78 percent for spring fruit. Greater variation occurred in the smaller sizes in the fall and in the larger sizes in the spring.

These data illustrate the extreme difficulty in securing samples which are truly representative. All of the fruit were obtained from bins out of lots from which Federal-State inspectors (Florida Department of Agriculture and U. S. Department of Agriculture cooperating) had drawn samples for tests of maturity and grade. Obviously they were found mature from a legal standpoint or they would have been condemned. With a few possible exceptions, such as perhaps the fruit of sizes 64 and 54 of the sample collected October 2, 1956, all of the below-standard samples were borderline cases in which slight variations in the technique used for extraction of the juice, human errors, or variability of the fruit could readily account for the discrepancy.

Chemical Analyses

Total Soluble Solids.—Total soluble solids in Marsh grapefruit harvest in the fall ranged from 7.2 to 12.2 percent, while those of the spring samples varied from 6.1 to 15.1 percent. Average values for solids decreased in fruits of size 96 to size 46, with a few exceptions. These results agree with those of Harding and Lewis (16), who found higher total soluble solids in smaller oranges than in larger ones. Fruits harvested in the spring contained 0.3 to 0.4 percent higher total soluble solids than those in the fall samples. The maximum values found for grapefruit harvested in the spring were from 1.7 to 3.5 percent higher in soluble solids than those in the fall samples. Harding and Fisher (15), have shown that total soluble solids gradually increase as the season progresses. Lower minimum values were obtained in the spring samples, presumably because of the presence of late-bloom fruit. Only a few fruits, principally those of size 46, failed to meet legal maturity requirements.

Summary

Investigations of variations in physical and chemical characteristics of Marsh grapefruit were undertaken to find ways by which shippers might be able to harvest and pack a product of higher quality and greater uniformity.

Measurements and analyses were made of 3,800 individual grapefruits for weight, height and diameter, flesh texture, mixing of varieties, volume of juice, total soluble solids, titratable acid, solids-to-acid ratio, ascorbic acid, and active acidity (pH). Some of the existing variations were evaluated.

Fruit weight differed as much as 39 to 50 percent of the average value

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between the maximum and minimum observed for fall fruit. Spring samples varied from 41 to 61 percent on that basis. The volume of juice varied from 58 to 87 percent of the average value between the lowest and highest values in the fall to 60 to 78 percent in the spring. The range between the minimum and maximum concentrations of total soluble solids differed from 39 to 47 percent of the average value for this size of fall fruit, while spring harvested samples varied from 56 to 88 percent of the average.

Differences between the minimum and maximum concentrations of acid ranged from 77 to 93 percent in the fall and from 119 to 131 percent of the average in spring fruit. Differences between the minimum and maximum solids-to-acid ratio were equal to 62 to 95 percent of the averages in the fall and 106 to 181 percent in the spring. Similarly, ascorbic acid varied 51 to 70 percent in the fall and 79 to 92 percent in the spring. Difference in active acidity (pH) of the composited juice was small.

Variations in diameter and height are controlled by the sizing operation. Solids, acid, and ascorbic acid content were inversely related to size. The physical factors of fruit weight, diameter, volume of juice, and texture of flesh are interrelated. No such relation was found for or with solids, acids, solids-to-acid ratio, ascorbic acid, or pH. When volume of juice is plotted against solids, acid, or solids-to-acid ratio, distinct breaks between coarse- or ricey- and good-textured fruit occur.

Variations in fruit weight, volume of juice, solids, acid, solids-to-acid ratio, and ascorbic acid were greater among samples than between sizes and greater in spring than in fall fruit. Substantial differences between crop years were found in the constituents.

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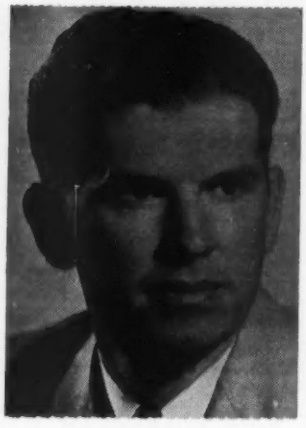

R. V. "RED" PHILLIPS

DR. A. F. CAMP

The Haines City Citrus Growers Association officially marked fifty years of service to its grower-members this week with a golden anniversary celebration attended by approximately 250 members and guests.

Staff annual reports, elections, awards, gift presentations, speeches, good food and much "back patting" designated the end of 50 years of successful operation for the grower cooperative, according to General Manager R. V. (Red) Phillips.

During the 1909-1910 season, following its founding on Aug. 7, 1909, the Haines City association produced 18,419 boxes of fruit. Last season the cooperative produced 1,441,709 boxes. "This," said Phillips, "is a measure of the progress and success enjoyed by our association after a half century of existence."

Haines City CGA's members met last Wednesday afternoon to hear Phillips report that the organization realized a margin of $171,877 this past year, $111,605 representing profit from picking and packing operations and $60,271 from production.

The members also heard Marvin Walker, general manager of the Florida Citrus Canners Cooperative with which Haines City CGA is affiliated, note that his organization, "the largest of its kind anywhere," processes more than six million boxes of fruit in a year of good crops.

Walker added, "Because of its large packs, the Canners Cooperative has had considerable stabilizing influence in the marketing of all processed products, a situation that has helped all Florida growers."

Before adjourning to a dinner session the members named L. B. Anderson, Jr. of Winter Haven to the board of directors and re-elected Forrest Attaway, W. A. Cook, C. D. Hughes, Gordon Huie, F. A. Randall, Dr. A. F. Camp, Walter B. Jones, Edward Marotti, Harold Schaaf and Frank Wheaton.

Dr. Camp was re-elected president for the 1959-60 season.

At the dinner a plaque was awarded to 93 year old Randall, who has served on the board for 44 years, including 22 as president.

Receiving gifts in recognition of outstanding service were O. D. Taylor of Belle Glade, Lorin T. Bice of Haines City and John T. Lesley of Tampa, former general managers; Lester Collier, Haines City, former sales manager; and Howard Thulberry, Lake Wales, former production manager.

Owen Cooper, executive vice president of Mississippi Chemical Corp., fertilizer manufacturing firm with which Haines City CGA is associated, spoke on "The Farmer Cooperative in Agriculture," pointing out the important role the cooperative plays in making farming profitable.

Business Notes...

Superior Fertilizer & Chemical Compand Holds Annual Meeting

G. D. Sloan, president of Superior Fertilizer and Chemical Company, has announced that at the annual meeting of Superior, held in Tampa on Thursday, October 15, 1959, James S. Wood was confirmed as general manager and secretary. Tom B.

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Swann and D. A. Hunt as vice presidents, R. W. Becker as treasurer, Aleen Benton as assistant treasurer-assistant secretary, and Margaret Wilson as assistant secretary.

Mr. Sloan, as President, will continue as chief executive of the company as in the past.

— — —

Cummer Lime & Mfg. Co., To Market FTE In Florida

An agreement for the sale and distribution of Ferro Fritted Trace Elements, a fertilizer additive known as "FTE", throughout the State of Florida has been signed between Cummer Lime and Manufacturing Company of Jacksonville, Florida and Ferro Corporation, producers of FTE, of Cleveland, Ohio, according to an announcement by Edward C. Roe, Cummer's vice president and general manager.

Cummer has been marketing FTE, a powdered, slowly-dissolving glass into which minor trace elements such as boron, manganese, molybdenum, zinc, copper, and iron have been smelted, mixed with their own high-calcium limestone under the trade name **Tracel Limestone** for the last two years. Under the new agreement they will continue to market Tracel Limestone as well as acting as manufacturer's representative for FTE in Florida. They will actively promote the sale and use of FTE both as a straight product and as an additive for fertilizer throughout the state.

— — —

Processors Complete Film "Milk From Oranges"

J. H. Van Horn, President of the Citrus Processors Association has announced the completion of an educational film entitled "Milk from Oranges".

The Citrus Processors Association is made up of the manufacturers of citrus cattle feed, with headquarters in Winter Haven, Florida.

The film is designed to show cattlemen, brokers and dealers the nutritional values of citrus pulp and the methods used in manufacturing and storage of the product.

Van Horn said that the film is to be distributed to county agents, 4-H clubs, FFA clubs, and other agricultural groups throughout the United States.

Van Horn said that distribution of the film will begin immediately following the premier showing, which was held at the annual convention of the Association in Hollywood Beach on October 29, 30, and 31.

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Avon Park, Fla.

Hurricane Judith, which suddenly formed in the Gulf, crossed the state bringing rain in this section. We could have done without these rains but more damage will be to vegetables, surrounding storm path, than to citrus. Very little wind was noticed in this area.

Prior to this storm we were having very hot weather and groves that had been wet all summer were being chopped and cover crops worked into the soil. Some splitting of fruit is being noticed and with the rains during storm more can be expected unless we have cooler weather. The trees are still holding a good color but plans for the fall feeding should be carefully studied and application made before signs of hunger appear. Remember to replace all essential elements that would be depleted by excessive rainfall. Rust mite has been active and controls have been necessary. Where Purple Mite is noticed it would be well to include proper Miticide.

SOUTH HILLSBOROUGH, MANATEE AND SARASOTA COUNTIES

Eaves Allison
P. O. Box 365, Sarasota, Fla.
Phone Fulton 8-2611

Citrus groves in all parts of this area are drying out considerably after a three week respite from the rains.

At this time weaker trees are showing up their water damage, and may be picked out here and there while just driving by the groves. A closer examination on the ground will show further evidence of the ill effect of the long rainy period. The potential still exists, and should be watched closely for symptoms. Proper control measures should be applied as soon as indicated.

One of the best controls of good general grove health is plenty of that good Lyons Fertilizer!

Fall vegetable crops are also responding to the cessation of the frequent rains, and a profitable season is generally hoped for in the area.

At the present writing—October 18th—we just missed hurricane Judith, and our rainfall was only about 2" on the average in the Palmetto-Sarasota section. Hope the picture is as good over the whole territory.

NORTH CENTRAL FLORIDA

V. E. Bourland
Winter Garden, Fla.
Phone 107

Weather is very nice now. We have had plenty of rain and some groves are still too wet, but most groves look good. Fruit is splitting bad in lots of them. Some oranges being picked, but not too many passing the test. Young trees are looking good, and have a wonderful growth.

This is the time to get fire lines, ditch banks and fence rows cleaned up!

Truck farmers are getting out some plants in spite of all the rains and some doing very nicely.

WEST HILLSBOROUGH, PASCO AND PINELLAS COUNTIES

J. W. Boulware
Phone WEbster 8-2638
Tampa, Fla.

Many groves are showing hunger signs due to the excessive leaching caused by heavy rains this year. Where this occurs we recommend application of the fall fertilizer a little earlier than usual so that the trees will enter the winter in a healthy state. A good application is generally needed except where trees show water damage in which case they should be fertilized lightly. Young trees of course have had their last application until about February 15th.

There has been some root damage and tree kill due to standing water this summer. The full extent of the root damage has not yet been completely revealed. It would seem that now is the time to plan your drainage to prevent root damage where possible, in future wet seasons.

The fall mite problem is showing up again. We have serviced several groves in which rust mite is increasing rapidly. Also red mite (spiders) and other mites are showing up in some groves quite heavily. In this case a good all purpose miticide is called for.

HILLSBOROUGH PASCO AND SUMTER COUNTIES

C. W. Dean
Gibsonton, Fla.
Phone Tampa 40-2592

First I would like to say that we don't need any rain at this time. It seems that we won't have anymore dry weather. So much for the weather. I notice that we are having much splitting and dropping in Valencias at this time (Oct. 16). Some groves were light in volume anyway and some growers have told me that they have already lost approximately 1/3 to 1/2 of their crop. This could mean a good fair price for oranges if they are dropping this way throughout the state. Time will tell.

NORTH CENTRAL FLORIDA

L. D. Geiger, Jr.,
Phone STATE 7-3952
Leesburg, Fla.

In mid-October in North-Central Florida finds the citrus growers beginning to get quite busy. Most growers have chopped down the cover crop and are about ready for the fall application of fertilizer. Some growers have all ready made this application and have cut it in.

The harvesting operation is beginning to pick up a little more each week as the fruit will pass. The fruit in most cases seems to be a little slow passing in this year in relation to when it usually passes. This year it looks as if the solids may be lower also, and this is probably due to the excessive amount of rain that we have had this year. In many places the crop is very light in number but due to the large sizes some of the difference will be taken care of here.

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Uncle Bill Says:

They is one thing about us Florida growers, while we don't git no bonus fer cuttin' down on the crops we raise and we don't git no government subsidy when prices ain't what someone thinks they ought to be we kin git a lot of satisfaction out of running our own business purty much like we want to.

We 'spect most of us git a lot of help from various government agencies who is willin' to give us advice for free when we have production problems that fret us occasionally . . . then there is a lot of mighty well qualified field service men representing the fertilizer companies who is only to glad to help us solve various problems which pester us from time to time.

'Course our taxes help to pay fer these government agencies that provide us with the information we jist mentioned, 'n our business helps keep the fertilizer companies in business, but this money is not an added tax on us or an added charge on the fertilizer we buy, so all in all, seems to me we're a lot luckier than a merchant who needs outside counsel . . . he usually has to pay fer it.

They is some things that only Nature kin cure, like too much rain, er a drouth and things like that . . . then they is this business about the law of supply and demand which is sometimes a bit off center, but these things ain't any more bother to us than they is to a lot of other business folks.

The one thing we kin all do to help ourselves is to produce the very finest fruits and vegetables that we kin possibly raise . . . and when we send these sort of crops to market we stand a heap better chance of gittin' top prices than we do on low grade stuff.

And we have found over a lot of years of experience that our own use of Lyons Fertilizers has enabled us to produce Maximum Crops of Finest Quality.

Less Of 1959 Citrus Crop To Be Used As Concentrate

More Florida oranges will be used by fresh fruit shippers, single strength canners and chilled juice producers this season than last, Robert W. Rutledge, Florida Citrus Mutual general manager, said today.

He said fewer boxes of oranges will be used by concentrators in making their product this season.

"Based on the current USDA crop estimate of 93 million boxes of Florida oranges, approximately 22 million boxes will go into fresh fruit channels," Rutledge said. "This represents about 20 percent of the total orange crop."

Last season 15.5 percent of the total crop went into fresh fruit channels. This includes fresh, express, export and home use.

"Because the grapefruit crop is estimated at nine percent less than last season, fresh, canned and concentrate marketing outlets will reduce their usage by about one million boxes each," he said.

Based on a 93-million-box crop this season, Rutledge said about 51 million boxes of oranges will go into frozen orange concentrate. Last season concentrators utilized about 52 million boxes of oranges in making their product.

Rutledge estimated this season's average yield will be 1.42 gallons of concentrate per 90 pound box of oranges. This is about 6.6 percent lower than last season's all time record of 1.52 gallons per box.

He said chilled juice producers will utilize for direct use about seven million boxes of oranges in making their product this season. Last season approximately six million boxes of oranges went into making this product.

"We recognize the fact that changes in the production and utilization pattern as the season progresses will have a bearing on the marketing of the 1959-60 crop," Rutledge said.

KEEP FARM RECORDS GET GAS TAX REFUND

Florida farmers will be able to redeem the additional federal gasoline tax which recently went into effect, according to Dr. C. C. Moxley, associate economist with the Florida Agricultural Extension Service.

Dr. Moxley explains farmers will have to pay the one-cent increase on gasoline, but can have all the federal tax refunded as in the past, for farm production.

"The tax increase," says the economist, "underlines the importance of keeping far mrecords to support refund claims."

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